TITLE Market Analysis: Traffic Alert and Collision Avoidance System (TCAS) Operational Performance Analysis

Name: Dennis L. Scanlon

Organization: AJA-47

Region: FAA Headquarters (ATO-A)

Phone number: 202-267-9422

E-mail: Dennis.Scanlon@faa.gov

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Responses due: April 9, 2007

Solicitation/Contract No.: Not Applicable

Phase: Not Applicable

Procurement Method: Market Analysis

Program Title: Traffic Alert and Collision Avoidance System (TCAS) Operational Performance Analysis

FAA Point of Contact:

Dennis L. Scanlon, AJA-47, 202-267-9422, Dennis.Scanlon@faa.gov

ANNOUNCEMENT

In accordance with AMS 3.2.1.3.12, industry is hereby informed that the Federal Aviation Administration (FAA) has a requirement estimated at $600,000.00 over three years.

BACKGROUND

The Traffic Alert and Collision Avoidance System, TCAS II Version 7, known internationally as the Airborne Collision Avoidance System (ACAS II), was released in 1998 and incorporated significant operational and technical improvements over the previous version (6.04A). The International Civil Aviation Organization (ICAO) mandated ACAS II equipage in ANNEX 6, Part I, chapter 6.18 by January 1, 2003, for certain operators internationally. This mandate elevated ACAS II as the worldwide collision avoidance standard.

Subsequent to the release of TCAS II/ACAS II, the FAA and other ICAO states established monitoring programs to measure ACAS performance operationally in the airspace. Several issues have been identified via these monitoring programs and simulations that warrant a detailed review and analysis of the collision avoidance system. Some of the issues have been identified and discussed within the international collision avoidance community (ICAO Surveillance and Conflict Resolution Systems Panel).

Some ICAO member states have proposed a change to the TCAS II Version 7 collision avoidance algorithms, known as SA01, which could improve coordination of collision avoidance maneuvers, thus increasing the level of safety provided by the TCAS/ACAS system. Through further detailed analyses and collaboration, it has been determined that a change to the collision avoidance logic is required and an implementation effort is currently underway to resolve this issue.

Additionally, recent technological developments in airborne surveillance technology, specifically Automatic Dependent Surveillance-Broadcast (ADS-B), could also enhance the performance of TCAS/ACAS. Civil and military operators have expressed interest in incorporating Hybrid Surveillance; however, civil standards require development to achieve the standardization and interoperability of Hybrid Surveillance Systems.

PURPOSE

The purpose of this market analysis is to obtain information that the FAA may consider in choosing whether and how to conduct this procurement and whether it should be a full and open competition, limited competition, or sole source procurement. This is not a screening information request or a request for proposal. The FAA is not seeking or accepting unsolicited proposals. The FAA is seeking interested sources that are capable of performing studies and analysis to investigate operational performance of TCAS II.

SCOPE OF WORK AND CAPABILITIES

The scope of the work to be performed is set forth in the attached Statement of Work.

FORMAT

Submission may be by e-mail or U.S. Mail:

If the submission is made via electronic means, send one copy to: Dennis.Scanlon@faa.gov. The electronic file name shall be as follows: (Your Company Name)TCAS.xxx and may be in Word, PDF, or Microsoft Document Imaging formats only.

If the submission is made via US mail, send one original and one copy to:

Dennis L. Scanlon, AJA-47
Federal Aviation Administration
800 Independence Avenue, SW
Room 335
Washington, DC 20591

The total length of your response may not exceed six pages in length, single spaced, 12 point type. If both electronic submission and hard copy formats are utilized, they must be identical. No oral submissions will be accepted.

SCOPE OF THE ORGANIZATION'S PRIOR WORK

The responder shall provide information to substantiate and demonstrate that it has the following capabilities:

1. Experience providing independent evaluations of aviation technologies, such as TCAS II, and your experience providing unbiased advice based upon the results of such evaluations. Organizations with a commercial interest in any of the TCAS II technologies or in systems and technologies, or either, that are existing or potential competitors to TCAS II technologies will be precluded from competition.
2. Experience and knowledge of the development, demonstration, and refinement of TCAS II technology and the period of time over which you have gained this experience. Also state the relevance of your experience to the requirements described in the Statement of Work.
3. Experience and willingness to serve on industry committees in support of the TCAS II Program Office
4. Experience analyzing operational data and reconstructing operational scenarios, and creating impact assessments for TCAS or similar related events.
5. Experience creating assessments of operational changes to TCAS or similar related systems.

COMPANY POINT OF CONTACT

Responders must include a company point of contact with telephone, FAX, e-mail address, if any, and U.S. Mail address.

CLOSING DATE

All responses to this Market Survey must be submitted to the above addresses no later than 3:00 PM (EST) on **April 9, 2007**. Late received comments may not be given full consideration. The Government will provide acknowledgment of responses to each respondent no later than **April 16, 2007**. The Government anticipates that a decision regarding how to conduct this procurement, if any, will be made by **April 20, 2007**. No telephone or electronic inquiries regarding the status of the procurement will be accepted.

APPLICABLE CLAUSES

All FAA AMS clauses are located at website address http://fast.faa.gov.

The following FAA AMS clauses are incorporated into this Market Analysis:

3.2.2.3-14 Late Submissions, Modifications and Withdrawal of Submittals (July 2004)
3.9.1-1 Contract Disputes (November 2002)
3.9.1-2 Protest After Award (August 1997)
3.9.1-3 Protest (November 2002)

GOVERNMENT POINT OF CONTACT

Responding parties shall direct questions or requests for additional information to Dennis Scanlon. Any questions or request for additional information should be timed to allow a response, if any, to be transmitted to all responders prior to the deadline for submission.

ADDITIONAL INFORMATION

This announcement is not intended to guarantee that procurement will occur and should not be construed as a commitment by the Government to enter into a contract.

This is a market analysis only; a complete procurement package is not available at this time.

The Government is not liable for costs associated with the preparation and submittal of inquiries or responses to this announcement and will not reimburse any costs incurred in responding to this public announcement.

The principle North American Industry Classification Systems (NAICS) code for this effort is 541330 (aerospace exception). If you maintain that you meet the Small Business Size Standards under Small Business Administration guidelines, describe why.

ATTACHMENTS

Statement of Work Traffic alert and Collision Avoidance System (TCAS) Operational Performance Analysis (4 pages)

END OF ANNOUNCEMENT

Statement of Work

Traffic Alert and Collision Avoidance System (TCAS)

Operational Performance Analysis

1. GENERAL:

1.1 FAA Organization: Office of Technology Development, Operations Planning in the FAA Air Traffic Organization, FAA/ATO-TD

1.1.1 Task: This Statement of Work (SOW) covers collision avoidance system performance analysis.

1.1.2 Date Required: 06/01/07 through 06/01/10

2. BACKGROUND:

The Traffic Alert and Collision Avoidance System, TCAS II Version 7, known internationally as the Airborne Collision Avoidance System (ACAS II), was released in 1998 and incorporated significant operational and technical improvements over the previous version (6.04A). The International Civil Aviation Organization (ICAO) mandated ACAS II equipage in ANNEX 6, Part I, chapter 6.18 by January 1, 2003, for certain operators internationally. This mandate elevated ACAS II as the worldwide collision avoidance standard.

Subsequent to the release of TCAS II/ACAS II, the FAA and other ICAO states established monitoring programs to measure ACAS performance operationally in the airspace. Several issues have been identified via these monitoring programs and simulations that warrant a detailed review and analysis of the collision avoidance system. Some of the issues have been

identified and discussed within the international collision avoidance community (ICAO Surveillance and Conflict Resolution Systems Panel).

Some ICAO member states have proposed a change to the TCAS II Version 7 collision avoidance algorithms, known as SA01, which could improve coordination of collision avoidance maneuvers, thus increasing the level of safety of the TCAS/ACAS system. Through further detailed analyses and collaboration, it has been determined that a change to the collision avoidance logic is required and an implementation effort is currently underway to resolve this issue.

Additionally, recent technological developments in airborne surveillance technology, specifically Automatic Dependent Surveillance-Broadcast (ADS-B), could also enhance the performance of TCAS/ACAS. Civil and military operators have expressed interest in incorporating Hybrid Surveillance; however, civil standards require development to achieve the standardization and interoperability of Hybrid Surveillance Systems.

3. SCOPE OF WORK: The Contractor shall perform studies and analyses to investigate the continued operational performance of TCAS II.

3.1 Tasks: The tasks to be accomplished under this effort are as follows:

a. The Contractor will serve as the recording secretary for RTCA SC-147 plenary meetings and as co-chair for the SC-147 Operations Working Group.

b. The Contractor shall perform studies and analyses to investigate display configurations and aural alerts for TCAS II Resolution Advisories (RAs). Studies have shown that some display configurations for Resolution Advisory displays (vertical speed tape) combined with aural alerts (adjust vertical speed, adjust) may be difficult for some pilots to interpret and thus, result in adverse performance in complying with negative RAs. The results of these studies shall be

documented in a report with recommendations for resolving this issue. This analysis effort should include the collection and analysis of TCAS RA responses via operational data collection, simulation and analysis. The Contractor shall perform these activities under the auspices of RTCA Special Committee 147.

c. The Contractor shall participate in developing training standards required to address adverse pilot performance associated with display configurations for the presentation of TCAS II Resolution Advisory (RA) guidance and associated aural annunciations. Results shall be documented in a report recommending the approach to resolving these issues.

d. The Contractor shall collect TCAS II Version 7 operational data through the use of cockpit observers, FAA ATC radar and voice tapes, and pilot, observer, and controller questionnaires. The contractor shall establish and maintain a database consisting of all relevant TCAS II Version 7 data collected. The contractor shall continue to review data on earlier versions of TCAS II to monitor their operation in the U.S. airspace. The contractor shall analyze all available data to determine the impact of TCAS on the National Airspace System (NAS), individual controllers, and specific geographic locations within the NAS. The contractor shall analyze the effectiveness of the TCAS logic in the operational environment and the proper implementation of the TCAS algorithms. Data will be provided to support any TCAS-related work initiated by RTCA.

e. The Contractor shall develop and distribute TCAS Newsletters and bulletins to the aviation industry based off of the results of operational monitoring or other work conducted under this Contract. The Newsletters shall concentrate on discussing and describing the performance of TCAS and on lessons learned through the collection and analyses of TCAS Version 7 data.

f. The Contractor shall provide technical, engineering, and program management support to the TCAS Program Office. Such support shall include:

    a. Developing and tracking program activities to ensure issues raised during various TCAS implementation and evaluation programs are properly identified and satisfactorily resolved
    b. Participating in industry forums where TCAS and other collision avoidance applications are being discussed or developed
    c. Monitoring and assessing avionics performance in the NAS
    d. Updating pilot and controller training programs and training guidelines
    e. Developing procedures to be used by flight crews operating TCAS in domestic and international airspace
    f. Evaluating the implementation of existing pilot and controller training programs
    g. Providing technical and operational inputs to the Program Office on certification of systems
    h. Developing material for inclusion in FAA Advisory Circulars, Technical Standard Orders, and other regulatory documentation

g. The Contractor shall maintain and monitor program management activities throughout task performance and report monthly status updates to SF-21 Program Office.

4. **PERSONNEL QUALIFICATIONS:** Contractor personnel providing support services under this task order will possess the following minimum qualifications obtained by education, training, or work experience.

   a. Director – A BA or BS or higher in a technical field plus a minimum of 15 years experience in support of civil, chemical, mechanical, or electrical engineering tasks.

   b. Principle Professional – A BA or BS in a technical field plus a minimum of 15 years experience in support of civil, chemical, mechanical, or electrical engineering tasks. A Masters degree or higher in a Sciences related field plus a minimum of 12 years experience.

5. **WORK LOCATIONS:** Services will be performed at contractor offices and/or FAA selected locations.

6. **TRAVEL:** Travel by contractor personnel is anticipated in performance of this task. All travel shall have prior authorization of the COTR.

7. **GOVERNMENT FURNISHED PROPERTY AND SERVICES:** The Government shall provide all equipment necessary to perform assigned tasks for work performed on FAA premises. Some office equipment will be available on a shared-use basis with Government employees.

8. **CONTRACTOR FURNISHED PROPERTY AND SERVICES:**

   a. Contractor will provide all workspace, equipment, software, office supplies, and related services necessary to perform assigned tasks for work performed at the contractor's facility.

9. **DELIVERABLES:**

The government requires the following from the contractor in order to monitor progress and ensure compliance: (all references to days are in business days)

   a. Some due dates may be dependent on program office milestones. The COTR will advise the contractor when dates require adjustment.

b. Some due dates may be dependent on contractor system development milestones. The contractor shall provide the COTR and CO an estimate and status report if dates will vary from previous estimates.

ITEM	DUE DATE
Reports on Reviews/Meetings/Trips	5 days after Review/Meeting/Trip
Progress Report	Monthly
Financial Status Report	Monthly
Special Reports (as needed)	5 days after completion
Project Management Plan	30 days after initiation
Program Management Review	Quarterly
Outlines and Drafts	As required
Newsletters / Bulletins	As required
Training Plans	As required
Process Description Documents	As required
Simulation Reports	As required
Activity Schedules	As required

The Project Management Plan (Microsoft Project/Word/PowerPoint) shall identify and define the organization(s), activities, overall tasks, principles, and objectives required to manage and control the development and maintenance of tasks listed in this Statement of Work. This plan shall include the management and technical organizational structure to the project management activity level, a Contractor Work Breakdown Structure (CWBS) and a development schedule identifying major milestones including due dates of all deliverables. The CWBS should contain a hierarchical list of tasks to be performed to the sub-task level and include a WBS dictionary containing detailed task narratives for each task.

Monthly progress reports shall summarize work performed under this delivery order, the funds expended during the month, total funds expended for effort to date, and the remaining unexpended funds. Submission of a monthly progress report shall be provided by the 20th day of the following month.

a. This periodic report shall also list all tasks in process, by WBS element, with a brief description of progress during the reporting period. Tasks, which started or completed during the reporting period should be clearly identified with progress indicated on a schedule summary. The report should identify any issues that surfaced during the reporting period and any technical, schedule, or management risk impacts to the program effort.

10. TRANSMITTAL/DELIVERY/ACCESIBILITY:

The Contractor shall provide 3 hard copies of each deliverable and one electronic version in the format specified by the COTR (copies shall be provided to the CO, COTR, and TOR).

11. PERIOD OF PERFORMANCE: 06/01/07 through 06/01/10